

## CLAIMS

1. Optical transmission system with a transmitter function, a transmission line and a receiver function where each channel has its optical spectrum truncated by a filter function according to a vestigial side-band method,  
the transmitter function comprising with modulators and a wavelength multiplexer for either equidistant or non-equidistant channel spacing  
the receiver function comprising a wavelength demultiplexer, and electrical receivers,  
the filter function comprising a first filter and a second filter, the second filter having a transmission response with maximum transmission at the central wavelength of the channel and the first filter has a transmission response with maximum transmission in the relevant sideband of said WDM channel, and the filters are tunable.
2. Transmission system according to claim 1 where the two filters are tunable with changes of the maximum distance between them.
3. Transmission system according to claim 1 where the transmission maxima of the first and the second filter is about 15 GHz apart from each others.
4. Transmission system according to claim 1 where the first and the second filter are fiber Bragg grating filters with a common support device.

5. Transmission system according to claim 1 where the first and the second filter are Fabry Perot Filters.

6. Transmission system according to claim 1 where the first and the second filter are structures in planar lightwave circuit.

7. Method for optimization of bit error rate in a VSB- WDM transmission system comprising the steps:

- Transmitting coded optical signals over a transmission line
- Demultiplexing the WDM channel wavelengths
- Filtering the sideband of the channel wavelengths

and additionally:

- Filtering with two parallel aligned filters where the first filter is filtering the sideband and the second filter is filtering the carrier wavelength
- Adjusting the second filter exactly on the channel wavelength by a feed back loop
- Maintaining the distance between the maxima of the two filters.